

REMARKS

In response to the non-final Official Action of 1 September 2009, claims 1, 12, 29, and 31-35 have been amended and claims 40-44 are newly presented.

Independent claims 1, 29, 31 and 32 have been amended to recite that the value for the parameter contained in the negotiation message sent by the first communication unit is a user-defined value, which is disclosed in the application as filed on page 21, third paragraph. Previously introduced features that require a checking before negotiation messages are exchanged have been moved into new dependent claims 40-43, thereby the checking has been further specified based on the disclosure of the application as filed at page 11, second and third paragraph.

Independent claims 12, 33, 34 and 35 have been amended by adding the feature that "said protocol is operated by protocol entities in said first communication unit and said third communication unit before and after said change of said association" based on the description of figures 3 and 4 in the detailed description of the patent application as filed (page 22, lines 15-28 and page 23, lines 1-13: timers T1 and T4 are re-negotiated) and the background of the invention (e.g. page 5-6 of the application as filed, bridging paragraph). Therein the scope of independent claims 12, 33, 34 and 35 has been limited to a re-negotiation of a parameter of a protocol, and, furthermore, claims (12, 33, 34 and 35) have been recast, so that re-negotiation messages are exchanged (instead of transmitted) between a first communication unit (CU) and a third CU, which is based on the disclosure of originally filed claim 1.

New claim 44 is dependent on claim 16, based on the disclosure of page 13, second paragraph of the application as filed.

Independent claim 29 is corrected by specifying the new second communication unit being "associated with a third communication unit of said second type". This feature is, for instance, disclosed by corresponding independent claims 31 and 32.

Independent claim 33 has been slightly reworded. No new matter has been added.

Subject-matter of the amended independent claims

The present invention relates to negotiation and re-negotiation of protocol parameters in the context of handovers in mobile communication systems. Applicant respectfully submits that the invention includes several novel and non-obvious elements, including but not limited to the following:

A first exemplary aspect, covered by independent claims 1, 29, 31, 32 and by dependent claims 5-11, 28 and 40-43, is related to the case where a handover of a first communication unit (e.g. a Mobile Station, MS) from a third communication unit of a first type (e.g. a GSM-Mobile Services Switching Centre, GSM-MSC) to a third communication unit of a second type (e.g. a UMTS-Mobile Switching Centre, UMTS-MSC) occurs. Therein, a first communication unit (e.g. a MS) is associated with at least one second communication unit (e.g. a Base Transceiver Station, BTS), a second communication unit is associated with at least one third communication unit (e.g. a MSC), and there exist third communication units of at least a first and a second type (e.g. UMTS-MSC and GSM-MSC) that require different choices of at least one parameter for use in the operation of a protocol that controls data transmission between the first and third communication units via the second communication units. In this case, the present invention proposes an initiative for an exchange of at least one negotiation message containing a user-defined value for the at least one protocol parameter (as for instance a re-sequencing timer) to be started by the first communication unit.

A second exemplary aspect, covered by independent claims 12, 33, 34 and 35, and by dependent claims 16-24 and 38, is related to the case where a handover of a first communication unit, from a second communication unit of a first type, to a second communication unit of a second type occurs. Therein, a first communication unit (i.e. a MS) is associated with at least one second communication unit (i.e. a BTS), a second communication unit is associated with at least one third communication unit (i.e. a MSC), and there exist second communication units of at least a first and a second type (e.g. a BTS that is connected via a high-delay network with its MSC and a BTS that is connected via a low delay network with its MSC) that require different choices of a re-negotiable parameter of a protocol that controls data transmission between the first

communication unit and the third communication unit via the second communication units. Therein, the protocol is operated by entities in the first communication unit and the third communication unit before and after the change of association, wherein a re-negotiation message containing a value for the parameter of the protocol is exchanged between the third communication unit associated with the new second communication unit and the first communication unit after the change of association.

A third exemplary aspect is covered by independent claims 26, 30, 36 and 37 and by dependent claims 27 and 39, and is related to the case where a handover of a first communication unit (e.g. a Mobile Station, MS) from a third communication unit of a first type (e.g. a UMTS-MSC) to a third communication unit of a second type (e.g. a GSM-MSC) may be possible in future. Therein, a first communication unit (e.g. a MS) is associated with at least one second communication unit (e.g. a BTS), a second communication unit is associated with at least one third communication unit (e.g. a MSC), and there exist third communication units of at least a first and a second type (e.g. UMTS-MSC and GSM-MSC) that require different choices of at least one parameter for use in the operation of a protocol that controls data transmission between the first and third communication units via the second communication units. In this case the present invention proposes that negotiation of the at least one protocol parameter (e.g. a re-sequencing timer) is performed between the mobile station and the first MSC prior to the potential handover, wherein at least one negotiation message containing a value for the at least one parameter is transmitted from the first communication unit to the third communication unit or vice versa.

Claim Rejections- 35 U.S.C. 102

At page 3 of the Office Action, claims 12, 16, 21, 26, 30 and 33-37 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 01/655881 (hereinafter WO'881).

With respect to claims 12 and 33-35, it is asserted that WO'881 discloses each feature of the claim, with reference made to page 8, lines 12-page 9, line 8; page 11, line 15- page12, line 24; page 13, line 25-page 14, line 11; and page 14, lines 22-24. Applicant respectfully disagrees.

WO'881 is related to parameter negotiation in a handover of a mobile station from a packet-switched UMTS-MSC to a circuit-switched GSM-MSC. Therein, the GSM (target) side bearer is set-up in a UMTS to GSM handover based on employment of a default set of parameters. The mobile station is then allowed to modify these parameters within a negotiation procedure, which is initiated by the GSM-MSC after the handover. The default parameters can be obtained based on mapping from the UMTS side bearer quality of service. The default set of parameters specifies, for instance, the number of traffic channels which can be calculated from the UMTS bit-rate (see p. 12, second paragraph and Fig. 3).

The amended independent claims 12, 33, 34 and 35 clearly pertain to a handover situation where a protocol that controls a data transmission between a first communication unit and a third communication unit is operated by entities in the first and third communication units before and after a change of association (e.g. a handover). Furthermore, a parameter of this protocol is re-negotiated after such a change of association implying that the parameter is initially negotiated when the data transmission is established. It must be particularly pointed out that the parameter may be essential for the operation of the protocol before and after the change of association, but due to, for instance, different network characteristics, an adaption of the parameter is necessary for a proper protocol operation after the change of association.

WO'881 describes a handover from UMTS to GSM. According to WO'881, default values for GSM specific parameters (which have not necessarily been negotiated during the UMTS-call set-up) are employed for such a handover and, if necessary, they are modified (negotiated) afterwards. In particular, WO'881 refers to a "Bearer Capability Information Element BCIE" (like a parameter indicating the maximum number of traffic channels), which is not needed during a UMTS-call set-up, but which is necessary to set-up a GSM-call (cf. page 11-12, bridging paragraph). The parameter is not essential for UMTS protocols operated before the handover and, thus, it is not negotiated during the call set-up. Thus, WO'881 only discloses the employment and modification (negotiation) of a parameter of a GSM specific protocol parameter after a handover.

In essence, WO'881 fails to explicitly disclose that a protocol (i.e. the same protocol) is operated before and after the change of association and that a parameter of such a protocol would be (initially negotiated when the transmission is established) and re-negotiated after the change of association. WO'881 rather implies that certain parameters should only be negotiated if a connection is handed over from UMTS to GSM (cf. page 15, lines 1-5: "The embodiment make it unnecessary [...] to generate and send any GSM-specific parameter at every UMTS-call setup").

Applicant, therefore, submits that claims 12, 33, 34 and 35 covering the second aspect of the present invention are not anticipated by WO'881.

At page 4 of the Office Action, claims 26, 30, 36 and 37 are also rejected under 35 U.S.C. 102(b) in view of WO'881. It is asserted that WO'881 discloses each feature of the claims, with reference made to page 3, lines 4-8; page 8, lines 12-31; page 11, line 29-page 12, line 23; page 13, lines 12-30; page 14, lines 5-11. Applicant respectfully disagrees.

The Office cites the text passages on page 12, lines 11-23, page 13, lines 20-30, and, furthermore, on page 14, lines 5-11 of WO'881 to disclose "[transmitting] at least one negotiation message containing a value for said parameter from a protocol entity of said first communication unit to said third communication unit of said first type or from a protocol entity of said third communication unit of said first type to a protocol entity of said first communication unit prior to said change of association" (cf. page 4, last paragraph of the Office Action).

In other words, the Office considers the cited text passages to disclose that a connection between two communication units A and C is negotiated between communication units A and B prior to an association of communication units A and C, wherein A is the first communication unit, B is the third communication unit of a first type and C is the third communication unit of a second type. Thus, two features must be distinguished when the cited text passages are analyzed, namely

- (i) the negotiation of the parameters of the connection of the first communication unit and the third communication unit of a second type

between the first communication unit and the third communication unit of a first type, and

- (ii) that the negotiation takes place prior to the change of association.

Applicant submits that both features, (i) and (ii), are neither disclosed nor rendered obvious by the cited text passages, as will be shown in the following:

First, the cited text passage on page 12, lines 11-23 states:

The following describes a procedure enabling handover from the MSC 16 of the packet switched UMTS to the MSC 12 of the circuit switched GSM. In the embodiment the GSM side bearer is set-up at a UMTS to GSM handover based on employment of a default set of parameters. The mobile station MS is allowed to modify these parameters after handover. These default parameters may be obtained based on mapping from the UMTS side bearer quality of service (QoS). The default set of parameters specifies e.g. the number of traffic channels which can be calculated from UMTS bitrate. That is, the missing values of the BCIE fields are determined by an appropriate network element. The default parameters may be defined beforehand e.g. by the network operator. [emphasis added]

Within this text passage, Applicant could not find any indication that a connection between a first communication unit and a third communication unit of a second type is negotiated between the first communication unit and a third communication unit of a first type prior to a change of association. Rather, it teaches that employed default parameters may be modified after a handover has taken place.

Accordingly, only a negotiation between the first communication unit (MS) and the third communication unit of a second type (target MSC 12) after a change of association may be disclosed and, thus, both features, (i) and (ii), are neither disclosed nor rendered obvious by this text passage.

Second, the text passage on page 13, lines 20-30 cites as follows:

That is, the connection between the mobile station 6 and the MSC 12 is negotiated based on default values before the actual handover procedure.

The target GSM MSC may initiate a MODIFY procedure, if this is required to negotiate the assumed multislot parameters with the mobile station. The MODIFY procedure is a feature of the GSM that is used for a new purpose in this

embodiment. In other words, the target MSC may send a MODIFY-message which contains a BCIE with the default multislot parameters. [emphasis added]

It is important to note that WO'881 cites within the text passage that the connection is negotiated based on default values before the actual handover procedure (note the word "actual") because it appears that the Office misinterprets this text passage in a way that the negotiation takes place before the handover (and not before the actual handover).

However, if the context of the entire paragraph is considered, a completely different interpretation of this text passage is necessary than that of the Office. WO'881 discloses that after initiation of the handover procedure a communication path is established, and "necessary radio resources may be reserved for the connection based on the default parameters" (WO'881, page 13, lines 11-17).

In accord with the argumentation of the Office, the following procedure must take place regarding a handover with respect to the disclosure of WO'881: First, a connection is negotiated (before the handover) based on default values leading to negotiated values (which must be distinguished from the default values). Second, a communication path is established. Third, radio resources are reserved based on default parameters.

However, this procedure does not make any sense because it is not comprehensible why in a first step certain values should be negotiated (and how this negotiation is possible, if there is no communication path established) and in a third step default values instead of these negotiated values are used to reserve radio resources.

Thus, the only possible interpretation according to the context of the above-cited text passage is that, first, a communication path is established. Second, radio resources are reserved based on default parameters. Third, a connection is negotiated (before the actual handover) based on default values leading to negotiated values.

Accordingly, the negotiation starts after a communication path is established (which is similar to a change of association) and, thus, feature (ii) is neither disclosed nor rendered obvious by this text passage. Furthermore, it can neither be considered to disclose feature (i) nor to render it obvious since this text passage does not even

mention a third communication unit of a first type and a third communication unit of a second type,

Third, the text passage on page 14, lines 5-11 cites as follows:

The mobile station MS may accept the new parameters by responding with a MODIFY_COMPLETE-message with the proposed parameters. In case the mobile station will accept the connection but not the proposed parameters, it may respond with altered parameters. The mobile station MS may also reject the connection and the proposed parameters by MODIFY REJECT in which case the call will be disconnected. [emphasis added]

Within this text passage, Applicant also could not find any indication that a negotiation message between a first and a third communication unit is exchanged prior to a change of association. It rather teaches that a mobile station may accept or reject default parameters after it has received a MODIFY message. However, there is no point of time mentioned when this action should take place. Moreover, the foregoing paragraph (p. 13-14, bridging paragraph) cites that "[the modify procedure] may be done after the actual handover procedure, i.e. when the time factor is not as critical as it is during the handover. However, the modify procedure may also be accomplished in during the set-up of the connection between the mobile station and the target MSC" [emphasis added].

Thus, the third text passage teaches that a modify procedure is started during or after a handover but not prior to a change of association, and, furthermore, it also does not even mention a third communication unit of a first type and a third communication unit of a second type. Accordingly, both features, (i) and (ii), are neither disclosed nor rendered obvious in this text passage.

In view of the foregoing, it is respectfully submitted that claims 12, 16, 21, 26, 30 and 33-37 are not anticipated or suggested by WO'881 and are in allowable form.

Claim Rejections- 35 U.S.C. 103

At page 7 of the Office Action, claims 1, 5-8, 28, 29, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO'881 in view of 3GPP TS 24.008 version 3.11.0 Release 1998, published in March 2002, (hereinafter GSM Specification).

With respect to claims 1, 29, 31 and 32, it is asserted that WO'881 discloses each feature of the claim, with reference made to page 8, lines 12-page 9, line 8; page 11, line 15- page 12, line 24; page 13, line 25-page 14, line 11; and page 14, lines 22-24, but that it fails to disclose transmitting from a protocol entity of said first communication unit, a negotiation message containing a value for said parameter to a protocol entity of said third communication unit of said second type, and a checking performed by said first communication unit whether said parameter is required for the operation of said protocol between said protocol entities of said first communication unit and said third communication unit of said second type and checking by said first communication unit whether said parameter needs to be negotiated or re-negotiated. However, it is asserted that in accordance with GSM Specification, a mobile station can initiate negotiation with a network in order to modify QoS parameter by transmitting a MODIFY request message to the network with new parameters, with reference made to page 194. It is asserted that one having ordinary skill in the art would realize such modification messages would be only initiated when required for network operation because a mobile station normally would not initiate request to negotiate for parameters unless necessary to avoid unnecessary network traffic. Thus, it is asserted it would have been obvious to combine the teachings of WO'881 and GSM Specification to arrive at the claimed invention. Applicant respectfully disagrees.

GSM Specification describes the procedures used at the radio interface core network protocols within the 3rd generation mobile telecommunications system and the digital cellular telecommunications system.

However, the newly introduced feature of independent claim 1 as amended that the negotiation message sent by the first communication unit contains a user-defined value is neither disclosed nor rendered obvious by WO'881, GSM Specification, a combination thereof or any other prior art document.

For instance, if a data-call is requested by a user in a UMTS cell and, thereby, the RLP parameter timer T4 is set to a user defined value, the timer T4 will not be negotiated because it is purposeless in UMTS. However, if the data call is handed over to a GSM cell, default values would be applied in a prior art system, whereas the present invention discloses a re-negotiation of the initially user-defined value for the

parameter after the handover, which is initiated by the mobile station (cf. page 20, last paragraph - page 21, third paragraph of the application as filed). Thus, also in the case of a handover between, for instance, UMTS and GSM, user-defined values are considered and re-negotiated.

Such a concept considering user-defined (parameter) values is clearly novel and non-obvious with respect to the cited prior art.

Particularly, the newly introduced feature specifying the value for the parameter contained in the negotiation message to be user-defined is similar to the main feature of dependent claim 11, which is considered to be allowable in the current Office Action.

Therefore, it is respectfully submitted that independent claim 1 as amended is not rendered obvious by the combination of WO'881 and GSM Specification, and is in allowable form.

Claims 29, 31 and 32 have been amended similarly to claim 1, and it is thus respectfully requested to indicate that amended claims 1, 29, 31 and 32 are allowable.

At least in view of their dependency on the independent claims, it is further respectfully submitted that the pending dependent claims are also in allowable form and are not anticipated or rendered obvious by the cited references.

Allowable Subject Matter

Applicant notes that claims 11, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. These claims are believed to be allowable in their current form in view of the comments above concerning the allowability of the claims from which these claims ultimately depend.

In view of the foregoing, it is respectfully submitted that the present application as amended is in condition for allowance and such action is earnestly solicited.

The undersigned respectfully submits that no fee is due for filing this Amendment After Final. The Commissioner is hereby authorized to charge to deposit account 23-0442 any fee deficiency required to submit this paper.

Respectfully submitted,



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